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REMARKS

In view of the following discussion, the Applicants submit that none of the claims now pending in the application are anticipated under the provisions of 35 U.S.C. §102 or made obvious under the provisions of 35 U.S.C. §103. The Applicants believe that all of these claims are now in allowable form.

I. SUGGESTION TO AMEND CLAIMS

The Examiner suggests that the Applicants remove the term "adaptively" from claims 1 and 14-15. In response, the Applicants have amended claims 1, 2, 3, 4, 9, 11 and 14-15 to delete the term "adaptively".

II. REJECTION OF CLAIMS 1-4, 8-13, 16-19 AND 21-22 UNDER 35 U.S.C. §102

The Examiner rejected claims 1-4, 8-13, 16-19 and 21-22 under 35 U.S.C. §102(b) as being anticipated by the Melnik patent (United States Patent No. 6,046,978, issued April 4, 2000, hereinafter "Melnik"). The Applicants respectfully traverse the rejection.

Primarily, the Applicants submit that Melnik fails to teach or suggest the novel invention of determining, at any node in the network, a route for transmitting packets that mitigates the effects of a detected interference source in response to information related to the detected interference, as positively claimed by the Applicants in independent claims 1 and 21, from which claims 2-4, 8-13, 16-19 and 22 depend.

In contrast, Melnik, at most, teaches a method for routing data in a wireless multihop network in which a control node (*i.e.*, a specific, designated node) prescribes a new routing path for an unsuccessfully delivered packet if it is determined that failed delivery of the packet was caused by a faulty node in the original routing path. As described by Melnik, a "faulty" node is a node that has failed (*i.e.*, is non-responsive). See, e.g., Melnik, column 11, lines 30-32: "Failure to receive a response from a node indicates that the non-responding node is the faulty node in the hop chain", emphasis

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added). A failed node is not the same as a node that actively interferes with a network communication.

The Applicants positively claim the steps of detecting interference (e.g., the modification or disruption of a communication due to networks or devices competing for a common frequency band) and configuring a route for a communication in response to information (e.g., location or identifying information about the source) about the interference. For example, it may be determined that noise in an IEEE 802.11 wireless communication network is caused by a cordless phone. In this case, a communication may be routed through the network in a way that mitigates the interference from the cordless phone. This is very different from the case in which a communication must be re-routed because a node in the routing path is non-responsive, as described by Melnik.

Moreover, Melnik fails to even discuss the subject of interference in anything more than a cursory fashion. In fact, the only portion of Melnik in which the word "interference" appears is the Background of the Invention, in which a passing mention is made of fading and multipath (*i.e.*, "the interference of an RF signal with itself due to reflections off surfaces such as walls, floors, ceilings, furniture, etc.", See, Melnik, column 5, lines 3-5). As discussed by Melnik, the interference of an RF signal with itself impedes the reliability of node-to-node communications. However, Melnik provides no teaching as to how such interference might be detected or mitigated.

Melnik thus fails to teach, show or suggest the novel invention of determining a route for transmitting packets that mitigates the effects of a detected interference source in response to information related to the detected interference, as positively claimed by the Applicants in independent claims 1 and 21. Applicants' independent claims 1 and 21 positively recite:

1. A method for use by nodes to route packet traffic through a multiple-hop wireless communications network, the method comprising:
detecting interference with packet-switched communications carried by radio frequency (RF) over the multiple-hop wireless communications network; and
determining, in response to information related to the detected interference, a route for transmitting packets through the multiple-hop wireless communications network that mitigates the effect of the interference on the packets. (Emphasis added)

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21. A protocol stack for use by a node to communicate over a wireless communications network, the protocol stack comprising:

a radio frequency (RF) physical layer for detecting signals that are attempting to interfere with packet-switched communications at the node, the RF physical layer producing a signal that indicates that interference has been detected; and

a network layer receiving the signal from the RF physical layer and producing an alternate route of packets through the wireless communications network in response to the signal. (Emphasis added)

Applicants' invention is directed to interference mitigation and adaptive routing in wireless ad-hoc packet-switched networks. As the popularity of wireless communication networks continues to increase, a variety of protocols have emerged, many of which operate in the same band of the radio frequency (RF) spectrum. Consequently, if two networks are placed in close proximity to each other and operate different protocols that compete for the same RF spectrum, these networks may interfere with each other. In addition, RF noise from other non-network sources (e.g., microwave ovens, cordless telephones) may also hinder overall network performance. In the case where a wireless network is ad-hoc (*i.e.*, lacking a central point of communication), other forms of interference such as traffic introduced by unauthorized users can further degrade network performance.

In one embodiment, Applicants' invention teaches a method for interference mitigation and adaptive routing in wireless ad-hoc packet-switched networks. The method detects interference with packet switched communications carried by RF over a multiple-hop wireless communication network. The method then adapts a route for transmitting packets through the network such that the effect of the detected interference on the packets is mitigated. The adaptation of the route is made in response to some information related to the detected interference (e.g., location or identifying information about the source of the interference).

The limitation of determining a route for transmitting packets that mitigates the effects of a detected interference source in response to information related to the detected interference is positively claimed by the Applicants in independent claims 1 and 21, recited above. Melnik fails to disclose or suggest this limitation. Thus, the

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Applicants respectfully submit that claims 1 and 21 fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder.

Dependent claims 2-4, 8-13, 16-19 and 22 depend, either directly or indirectly, from claims 1 and 21 and recite additional features therefor. As such and for at least the same reasons set forth above, the Applicants submit that claims 2-4, 8-13, 16-19 and 22 are also not anticipated by the teachings of Melnik. Therefore, the Applicants submit that claims 2-4, 8-13, 16-19 and 22 also fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

III. REJECTIONS OF CLAIMS 5-7, 14-15 AND 20 UNDER 35 U.S.C. §103**A. Claims 5-7 and 20**

The Examiner rejected claims 5-7 and 20 under 35 U.S.C. §103(a) as being made obvious by Melnik. The Applicants respectfully traverse the rejection.

As discussed above, Melnik fails to disclose or suggest the novel invention of determining a route for transmitting packets that mitigates the effects of a detected interference source in response to information related to the detected interference, as positively claimed by the Applicants in independent claim 1. Accordingly, independent claim 1 is not made obvious by the teachings of Melnik.

Dependent claims 5-7 and 20 depend, either directly or indirectly, from claim 1 and recite additional features therefor. As such, and for at least the same reasons set forth above, the Applicants submit that claims 5-7 and 20 are also not made obvious by the teachings of Melnik. Therefore, the Applicants submit that claims 5-7 and 20 fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

B. Claims 14-15

The Examiner rejected claims 14-15 under 35 U.S.C. §103(a) as being made obvious by Melnik in view of the Hwang et al. patent (United States Patent No. 6,671,265, issued December 30, 2003, hereinafter "Hwang"). The Applicants respectfully traverse the rejection.

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As discussed above, Melnik fails to disclose or suggest the novel invention of determining a route for transmitting packets that mitigates the effects of a detected interference source in response to information related to the detected interference, as positively claimed by the Applicants in independent claim 1. Hwang does not bridge this gap in the teachings of Melnik. Hwang, at best, only teaches methods for optimizing hard handoffs (e.g., between mobile switching centers) in a Code Division Multiple Access (CDMA) network. Accordingly, independent claim 1 is not made obvious by the teachings of Melnik in view of Hwang.

Dependent claims 14-15 depend from claim 1 and recite additional features therefor. As such, and for at least the same reasons set forth above, the Applicants submit that claims 14-15 are also not made obvious by the teachings of Melnik in view of Hwang. Therefore, the Applicants submit that claims 14-15 fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder.

IV. CONCLUSION

Thus, the Applicants submit that none of the presented claims is anticipated under the provisions of 35 U.S.C. §102 or made obvious under the provisions of 35 U.S.C. §103. Consequently, the Applicants believe that all of the presented claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Kin-Wah Tong at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

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Respectfully submitted,

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